

APPLICATION FOR  
UNITED STATES LETTER PATENT  
SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

Be it known that I, Ralph M. Pivonka, a citizen of the United States, and resident of the United States of America, having a postal address of 915 Maple, City of LaCrosse, and State of Kansas 67548, have invented new and useful "Mobile Flame Sterilizer", of which the following forms the specification.

## **“MOBILE FLAME STERILIZER”**

### **CROSS REFERENCE TO RELATED APPLICATIONS**

Not applicable.

### **STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT**

Not applicable.

### **REFERENCE TO MICROFICHE APPENDIX**

Not applicable.

### **BACKGROUND OF THE INVENTION**

#### **Field of the Invention**

The present invention relates generally to a flamer. More particularly the present invention relates to a mobile flamer, attachable to the back of a tractor, for sterilizing poultry litter, soil, pavement, etc.

#### **Background Art**

Poultry litter may be sterilized by chemical means. As usual, the issue becomes that of chemical retention and the effect of the chemicals on the environment. Poultry

litter may also be sterilized by flame heat, as disclosed by Mackenzie in U.S. 3,962,044. Because he discloses stationary equipment for litter sterilization, the method of Mackenzie '044 requires a significant investment in machinery to handle the litter for sterilization. Space for the machinery and appropriate shelter is also necessary.

A tractor drawn flamer was disclosed by Pivonka in U.S. 6,014,835 for the purpose of flame cultivation. Because of its open-flame design, the flamer of Pivonka '835 is not suitable for sterilization purposes. Because the use of the Pivonka '835 flamer for sterilization was not considered, there was no motivation to make the flamer enclosed for sterilization.

Handheld torches and flamers are available, again especially for weed control and ice melting. These flamers are not suitable for the large task of sterilizing large amounts of poultry litter or soil, etc. due to their small coverage and the weight that must be supported or drawn by the user.

There is therefore a need for a tractor drawn or tractor mounted flamer having adequate coverage to sterilize materials over a large area. There is an additional need for such a flamer having its flame enclosed to concentrate its heat; and to protect objects and people that might be harmed by the heat of flaming.

## BRIEF SUMMARY OF THE INVENTION

An object of the present invention is to provide a flamer suitable for sterilizing material lying over a large area. Such materials include poultry litter, soil, and pavement. Other objects within this object include providing a flamer with an enclosed flame to concentrate the heat and to protect surroundings from the heat; and a flamer that is mobile so large areas may efficiently be sterilized with minimum manpower.

Tractors are ubiquitous in the agricultural industry. Because of tractors' versatility, implements are often made to mount to a tractor or be drawn behind a tractor. Heat has long been used for sterilization. So is it possible to utilize a tractor for transporting a flamer to provide heat for sterilization. Such a flamer is mounted on the tractor – preferably on a three-point hitch or quick coupler. An additional embodiment of the present invention is represented by a flamer on wheels or skids and drawn behind a

vehicle as a trailer.

Other objects, advantages and novel features of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings.

#### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

**Fig. 1** is a perspective view of the tractor-mounted flamer with a fuel tank mounted thereon;

**Fig. 2** is a perspective view of the tractor-mounted flamer with the fuel tank mounted on the side of the tractor;

**Fig. 3** is a side elevation view of the tractor-mounted flamer;

**Fig. 4** is a rear elevation view of the tractor-drawn flamer;

**Fig. 5** is a side view of the wheel-mounted flamer;

**Fig. 6** is a perspective view of the underside of the tractor-mounted flamer;

**Fig. 7** is a side elevation view of the tractor-mounted flamer being used to sterilize a surface; and

**Fig. 8** is a perspective view of the tractor-mounted flamer showing a heat shield for the fuel tank and insulation around the skin of the flamer.

#### DETAILED DESCRIPTION OF THE INVENTION

A perspective view of one embodiment of the present invention is shown in **Figs. 1, 2 and 8**. A side view and a rear view are seen in **Figs. 3 and 4**, respectively. A mobile flamer **100** is shown mounted on an implement hitch **105** of a tractor **110**. Fuel may, optionally, be carried on the flamer in a fuel tank **120**. A heat shield **300** for the fuel tank is shown in **Figs. 3 and 8**, but is removed from **Figs. 1 and 4** for clarity. A suitable heat shield **300** comprises a sheet metal pan of adequate gage. In a second embodiment, the fuel may be separate from the flamer **100**, for instance, carried on the tractor in a tractor-mounted fuel tank **220**.

A hood for the flamer **100** comprises an external frame **130** and skin **140**.

Insulation 310 over the skin 140 is shown in **Figs. 3 and 8**, and is an optional aspect for this invention. Because the frame is external to the skin 140, the frame is exposed to less radiant heat transfer, reducing the problems such as oxidation and fatigue caused by high temperatures and thermal cycling. In addition, the flamer 100 can be insulated while maintaining a reflective surface inside the flamer because frame 130 members are not in the way.

The skin 140 substantially contains the high temperature gases, protecting the surroundings and concentrating the heat to the material to be sterilized. Insulation 310 over the skin provides additional protection.

Adjustable skids 150 are used to maintain an appropriate height above the litter or other material 710 (see **Fig. 7**) to be sterilized. The weight of the flamer 100 may be shifted between the tractor hitch 105 and the skids 150, as needed. The flamer 100 is picked up with the tractor hitch 105 and carried off the surface for transport, cooling, etc.

An additional embodiment is shown in **Fig. 5** wherein the flamer 100 is carried on wheels 510 and drawn behind the tractor 110 by its tongue 520. The wheels may be drawn up, allowing the flamer 100 to rest on its skids 150 when in use. One advantage to this embodiment is that the flamer 100 may be towed behind any of a multitude of vehicles such as a truck, four-wheeler, or tractor.

The underside of the tractor-mounted flamer 100 is shown in **Fig. 6**. A plurality of burners 610 are arrayed across the front of the flamer 100, the angles of which are adjustable, as shown by the dashed lines. A barrier 620 may optionally be provided to assist in concentrating the heat, containing the gases, and protecting the surroundings. An additional option is shown as a set of rake teeth 630 to loosen and stir the material 710 being sterilized.

The flamer 100 of the present invention is shown in operation in **Fig. 7**. The surface material 710 being sterilized may be poultry litter, other livestock manure, soil, concrete, etc. The preferred method of sterilizing poultry litter using this invention includes the steps of holding poultry in confinement such that litter accumulates to form a surface; transporting a flamer to the litter surface; setting the flamer on skids on the

surface; setting a flame to the burner such that the flame is contained within a hood; and heating the poultry litter sufficiently to kill microbes and bacteria.

The above embodiments are the preferred embodiments, but this invention is not limited thereto. It is, therefore, apparent that many modifications and variations of the present invention are possible in light of the above teachings. It is, therefore, to be understood that within the scope of the appended claims, the invention may be practiced otherwise than as specifically described.